Initial	Date
[illegible]	4/16/12
CMO	4/9/12

BA WTR
WR ND
Mail Stop 60189

APR 16 2012

Memorandum

To: Project Leader, Tewaukon National Wildlife Refuge Complex

From: Chief, Division of Water Resources

Subject: 2011-2012 Annual Water Use Report/Management Plan

The reports for Tewaukon and Storm Lake National Wildlife Refuges have been reviewed and approved as submitted. The 2012 Water Management Plan for Tewaukon NWR will be forwarded to the North Dakota State Engineer's Office as your 2012 State Operation Plan.

In January, Carrie Cordova of my staff requested a status update of the data logger installation and Jack Lalor indicated that staff time is limited and therefore he would mail them back. Please send them at your earliest convenience because my staff may be able to utilize them elsewhere this field season.

Thank you for your timely submission of the report and attached is the signed approval page for your files.

S/ MEGAN ESTEP

Attachment

bcc: WTR rf

WTR:CCordova:cc:04/09/2012
I:\WATERUSE\ND\TEWAUKON NWR\wateruse_11.doc

TEWAUKON NWR COMPLEX

ANNUAL WATER MANAGEMENT PLAN
2011 WATER USE REPORT
2012 MANAGEMENT PLAN

Prepared by: Kristine Askerooth Date: 2/1/12

Submitted: _____ Date: 3/15/12
Rob Bundy, Project Leader

Approved: _____ Date: 4/9/12
Regional Refuge Supervisor

Concur: _____ Date: 4/16/12
Chief, Water Resources Division

Tewaukon National Wildlife Refuge Complex
2011 Water Use Report
2012 Water Management Plan

REFUGE MANAGED WETLANDS

CCP Refuge 1.5 Objective: Annually provide for approximately 20% in dry, 20% in shallow, 20% mid-depth, and 20% open water wetland conditions on Refuge managed wetlands and manage remaining 20% as a reserve to adjust to local climatic and habitat conditions.

1. **List of Water Rights**

See Appendix 1.

2. **Water Use - 2011**

Month	Temperatures		Precipitation	
	High (Average)	Low (Average)	Rain (inches)	Snow (inches)
January	12	-6	0	0.6
February	20	2	0	1.0
March	30	11	0	1.64
April	51	35	1.68	0
May	64	45	2.66	0
June	76	57	4.70	0
July	86	65	5.96	0
August	82	59	.67	0
September	73	47	0	0
October	63	40	0	0
November	45	21	0	0
December	35	16	0	0
Totals:			**15.67**	**3.24**

Information taken from ND Agricultural Weather Network websitehttp://ndawn.ndsu.nodak.edu/
The Wyndmere weather station was used. Precipitation varied widely across the three counties.

Large snow depths led to more early spring flooding. Precipitation fell in the spring and early summer and contributed to the flooding but then disappeared in August. Virtually no precipitation fell from August into December. Temporary wetlands dried up, seasonal wetlands either dried up or shrank to a third the size, semi-permanent wetlands began to shrink slightly and large permanent wetlands remained the same. Another flood event occurred in July when six inches of rain fell in a short amount of time in the watershed. The Wild Rice River continued to run until very late in the winter contributing to the amount of water in the large permanent wetlands.

Pool 1 (Lake Tewaukon): Pool went into the spring at full pool (1148.00). Heavy rains in the watershed helped keep the lake full into late December.

Parker Bay (east end of Lake Tewaukon): Boards remained in place to maintain a three foot water depth. Freeze up elevation was 1148.50.

Pool 2 (Cutler Marsh): Water was held in Pool 2 as low as possible to promote emergent vegetation. The pool was close to going over the structure in the spring and water levels were dropped as the River began to drop later in the summer. Freeze up was at 1148.18.

Pool 2A: Pool was higher at freeze-up than in early spring. Freeze-up was 1153.50.

Pool 3 (Maka Pool): Water overtopped dike in late spring. Water was maintained as low as possible to facilitate vegetation growth but was difficult due to spring flooding, almost 6 inches of precipitation in the watershed, and the high River levels that remained until early winter. Freeze up was at 1151.

Pool 3A: Pool followed Pool 3 elevations.

Nickeson Bottoms: This pool only received local inflows. Attempts were made to lower water levels whenever possible however large amounts of inflows and precipitation continue to raise the level of this pool. Freeze up level was approximately 1153.45.

Pool 4 (River Pool): Pool 4 dike was over-topped on and remained full for approximately a month. Attempts were made to maintain the level at 1158.85. Freeze up at 1155.30.

Pool 5: Dike repair was completed in October 2010 and the pool was filled and freeze up occurred at 1158.12.

Pool 5A: Dike repair was completed in October 2010 and the pool was filled and freeze up occurred at 1160.00.

Pool 6: Pool filled to 1163.96. Pool froze up at 1166.56.

Pool 7: Pool filled to on 1172.38, water dropped to a freeze-up level 1170.95.

Pool 7A: Freeze up was at 1172.50.

Pool 8 (Hepi Lake): Pool 8 water levels started and ended up fairly constantly. Freeze up was at 1171.25

Pool 9: Pool began the year full pool and due to high precipitation and froze up at approximately 1168.50.

Pool 10: There was no flow into this pool except local precipitation. Freeze up occurred at approximately 1175.85.

Pool 11 (West White Lake): This pool level peaked in the early summer and boards were pulled on to dry up the pool. Freeze up occurred at 1147.64.

Pool 12 (East White Lake): Pool 12 received inflows from Pool 11 and when the water level got high enough it flowed into Pool 2 to the Wild Rice River. By freeze up, Pool 12 was at 1147.64

Pool 13 (Mann Lake): Local runoff from the high amount of precipitation came into Pool 13. Evaporation had lowered it to approximately at freeze up 1207.00.

Pool 14 (Sprague Lake): Freeze up at approximately on 1214.25.

Pool 16 (Horseshoe Slough Group):
Only local inflows – keep out water from Wild Rice River. Attempts were made to release water into Wild Rice River when possible. The elevations of the Horseshoe Slough wetlands dropped considerably by the end of the fall and freeze up occurred at 1206.66 for Pools A, B, C, B West, B North, C North, C South and C East.

3. **Impoundment Data**
Please see the attached chart (Appendix 2) for capacities for each pool at various elevations. No formal inflow/outflow records were maintained.

4. **Location Map**
See attached Refuge map (Figure 1 and 2) with all the management pools delineated.

Figure 1: Tewaukon Unit Managed Wetlands

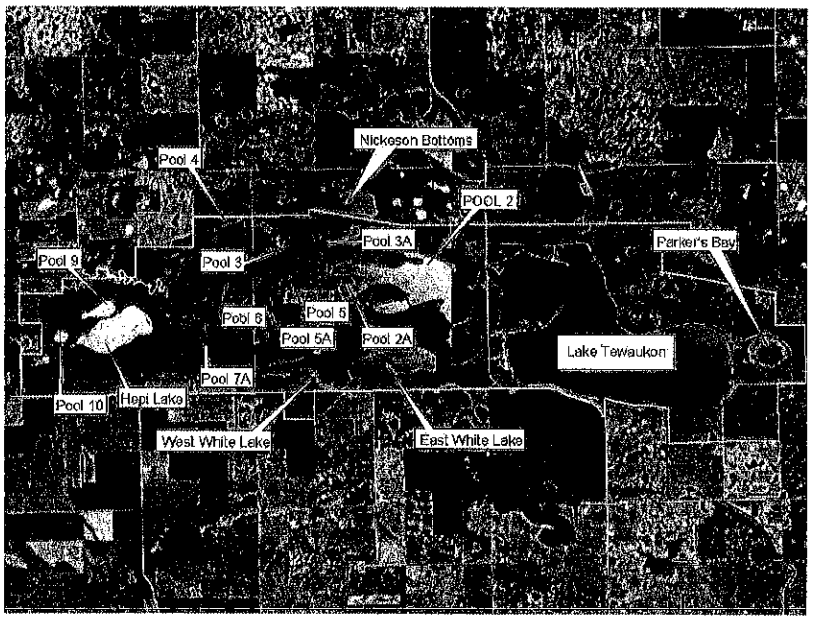
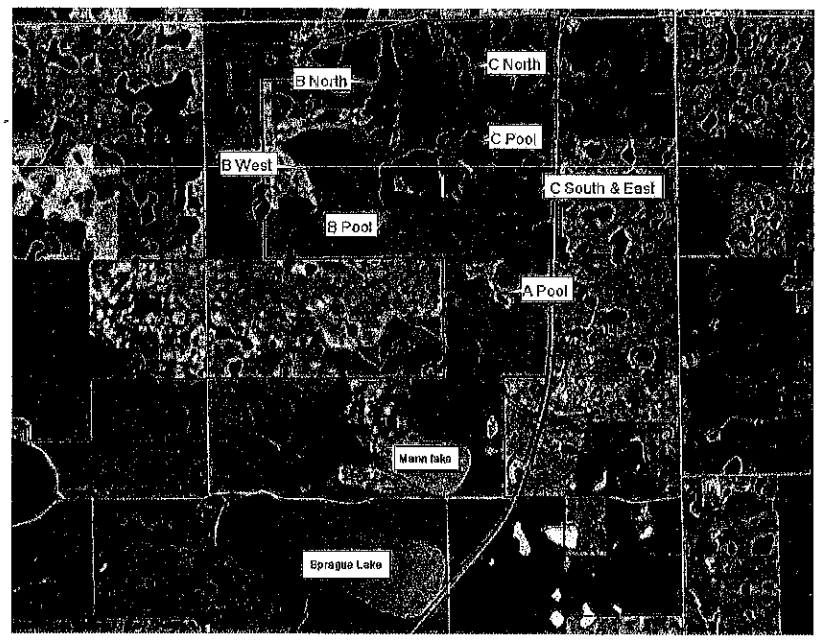


Figure 2: Sprague Lake Unit Managed Wetlands



5. 2012 Plans

Pool 1 – Lake Tewaukon - Maintain elevation at 1148 (full pool)

Parkers Bay - Maintain at 2 feet in depth, below 1148, with minimal inflows to promote vegetation growth

Pool 2 - Maintain elevation below 1148 to encourage emergent plant and invertebrate population growth.

Pool 2A - Maintain elevation at 1154.

Pool 3 - Maintain elevation at 1148.

Pool 3A - Maintain elevation at 1154-1155 or below.

Nickeson Bottoms - Continue to drop the level of water if possible. Restrict inflows.

Pool 4 - Lower elevation to 1158.

Pool 5 - Fill and maintain elevation at 1156.

Pool 5A - Fill and maintain elevation at 1160.

Pool 6 - Maintain pool at 1168.

Pool 7 - Maintain pool elevation at 1172.

Pool 7A - Maintain pool at 1175.

Pool 8 - Maintain pool at 1172 or below.

Pool 9 - Maintain pool at 1164.

Pool 10 - Maintain pool below 1172 No inflows.

Pool 11 – West White Lk - Maintain pool at 1148.

Pool 12 – East White Lk - Allow pool to drop through evaporation and restricting inflows.

Pool 13 – Mann Lake - Lower pool as the Wild Rice River goes down. Restrict inflows.

Pool 14 –Sprague Lake - Maintain pool at 1214.

A Pool Water levels will be allowed to drop. Restrict inflows.
B Pool Water levels will be allowed to drop. Restrict inflows.
B West Water levels will be allowed to drop. Restrict inflows.
B North - Water levels will be allowed to drop. Restrict inflows.
C Pool (North and & C Pool) - Water levels will be allowed to drop. Restrict inflows.

Appendix 1

List of Water Rights

Water Right Filing No. 57: Declaration of Filing dated September 1, 1934 claimed 104 surface acres, for 397 acre-feet storage and 312 acre-feet seasonal use for Clouds Lake (Pool 8) now called Hepi Lake from unnamed tributary to Wild Rice River. Listed on the same sheet as Lake Tewaukon/White Lake, as per RO(EN) Marshall Fox's 11-14-83 memo. Water use in pools 5 through 10 is covered under this right, with Hepi Lake to be drawn down to fill these pools.

Water Right Filing No. 64: Declaration of Filing dated September 1, 1934, for Lake Tewaukon and East and West White Lake (including Cutler Marsh), 1417 surface acres, for 7198 acre-feet storage, 4251 acre-feet seasonal from Wild Rice River and unnamed tributary.

Permit #1261: 4852 acre-feet storage and 2287 acre-feet seasonal use, for a total of 7139 acre-feet from the Wild Rice River for fish and wildlife use. This permit covers additional storage and seasonal use in Lake Tewaukon, Cutlers Marsh and West White Lake; 409 acre-feet seasonal use to replace water to be diverted from the watershed by Sargent County Water Conservation District project; and total storage and seasonal use for Pools 3 and 4. Priority date December 28, 1964.

Tewaukon NWR #1262: 1,130 acre-feet yearly (635 acre-feet storage and 495 acre-feet seasonal use) for Sprague Lake, dated December 28, 1964, diversion from an unnamed creek in the SE1/4 NW1/4, Sec. 2.

Tewaukon NWR #1263: 686 acre-feet yearly for Mann Lake (total of 236 acre-feet comprised of 107 acre-feet storage and 129 acre-feet seasonal use) and Horseshoe Slough (total of 450 acre-feet comprised of 270 acre-feet storage and 180 acre-feet seasonal use) dated December 28, 1964, diversion from the Wild Rice River.

Tewaukon NWR #3816 Nickeson Tract: 571 acre-feet (474 acre-feet storage, 97 acre-feet annual use) for the Nickeson Bottoms, a tract jointly owned by the ND Game and Fish Department, US Bureau of Reclamation and US Fish and Wildlife Service (FWS). Diversion is from the Wild Rice River, W ½ Section 27, T. 130 N., LTL, R. 54 W. Priority date August 15, 1985. Received perfected water permit on August 14, 1997. Recorded in the Register of Deeds, Sargent County on March 3, 1998.

In December, the Service submitted an application for prescriptive water rights pursuant to the provisions of State Senate Bill No. 2182 for 859 acre feet.

Appendix 2

Pools, Elevations and Acres

Pool No. & Name	January 1, 2011			December 31, 2011		
	Elevation	Surface Acres *	Volume (acre ft.)*	Elevation	Surface Acres *	Volume (acre ft.) *
Pool 1 - Tewaukon	1148.14	1061	8523	1148.18	1061	8566
- Parker's Bay	1148.40	87	319	1148.50	87	328
Pool 2 - Cutler's Marsh	1147.81	170	347	1148.18	190	414
Pool 2A	1152.0	24	46	1153.50	28	85
Pool 3 - Maka Pool	1151.49	39	86	1151.00	32	68
Pool 3A	1154.89	11	19	1151.00	0	0
Nickeson Bottoms	1152.85	-	-	1153.45	-	-
Pool 4 - River Pool	1155.52	20	21	1155.30	18	17
Pool 5	1156.0	0	0	1158.12	2	2
Pool 5A	1161.0	1	1	1160.00	0	0
Pool 6	1163.96	0	0	1166.56	4	5
Pool 7	1172.38	17	13	1170.95	9	9
Pool 7A	1173.52	6	0	1172.50	0	0
Pool 8 - Hepi Lake	1171.74	85	152	1171.25	82	111
Pool 9	1166	11	35	1168.50	13	65
Pool 10	1175.24	7	20	1175.85	8	25
Pool 11 - West White Lake	1148.01	43	58	1147.64	36	43
Pool 12 - East White Lake	1148.01	101	490	1147.64	100	453
Pool 13 - Mann Lake	1207.0	46	164	1207.00	46	164
Pool 14 - Sprague Lake	1214.49	198	1726	1214.25	197	1678
Pool 16 - Horseshoe Slough						
- Pool 1 (A Pool)	1207.90	66	88	1206.66	34	27
- Pool 2 (B Pool)	1207.90	55	215	1206.66	48	151
- Pool 3 (C Pool)	1207.90	12	52	1206.66	11	37
- Pool 4 (B West)	1207.90	57	212	1206.66	49	146
- Pool 5 (B North)	1207.90	38	91	1206.66	28	50
- Pool 6 (C North)	1207.90	14	17	1206.66	7	5
- Pool 7 (C South & C East)	1207.90	25	72	1206.66	20	44

Appendix 3

WATER USE REPORT
SHORT FORM

Storm Lake NWR, Sargent County
Station Name

Spring 2011
Date of Inspection

Declaration of Filing: 9/01/1934
Water Right No.
Several
(729 acre-feet storage)
(516 acre-feet seasonal)

Drainage ditch (legal)
Sources(s)

Means of Diversion Uncontrolled
Rate Unknown

Water Diverted: Yes X No ____

Water Level est 654 acre-feet
(Elevation or Est. Storage Amount)

* Impoundment(s): Yes ___ No X
* Well(s)
Free Flowing none gpm
Pumped_____ gpm

Surface irrigation_____
(Crop) _____
Fish & Wildlife X virtually no public use
Stock_____

Overall Climatic Conditions: Above normal snowfall in the winter of 2010/2011 and a wet spring contributed to flooding in the eastern third of North Dakota. In 2009 the Corps of Engineers built a permanent dike to protect the town of Milnor from overland flooding. The permanent dike kept flooding in the town of Milnor to a minimum. The fall was very dry and the level of Storm Lake dropped.

Condition of Facilities: A diversion dam at the head of the feed ditch serving Storm Lake washed out well before 1976. The town dug a ditch beside the existing structure to allow for flood waters to move out of the town. At the end of 1997 the town placed a culvert with flap gate at an agreed elevation by a special use permit. The culvert is well above the existing structure and will allow flood waters to move out without impacting the water right. The ditch through the golf course was cleaned out in 1997 through a special use permit to remove flood waters. At that time the Golf Course placed two new bridges on the fee title property without notification of the Refuge. An agreement with the Service was signed to mitigate the mowing of the fee title property with no mow areas along the golf course edges was signed in 1999. In 2005, the Service issued a permit to the City to use Glyphosate to manage cattail growth in the ditch. In 2006 an agreement between the US Fish & Wildlife Service and the city of Milnor was signed to lower an existing culvert. The culvert maintains the lake elevation and lowered the management level in Storm Lake by one foot (from 5 to 4 feet).

Proposed Water Program: No water management capability is present. Water runs down the ditch into the lake to an unknown degree each spring. Water did fill Storm Lake in 1993. High waters and overland flooding have resulted in the feeder ditch becoming an outlet for Storm Lake water into the legal drain.

Comments: The lake serves as a waterbird resting area by Canada geese, canvasbacks, redheads, lesser scaup, mallards, teal, gadwalls, western grebes, pelicans in high water years. Water levels fluctuate without management. If active management was initiated, some degree of improvement in nesting and brood rearing habitat might be gained by a cycle of draw down management. It is questionable if the benefits would be worth the costs.

Carrie Cordova/R6/FWS/DOI
01/26/2012 09:37 AM

To Jack Lalor/R6/FWS/DOI@FWS
cc Meg Estep/R6/FWS/DOI@FWS
bcc
Subject Re: data loggers

Jack,

Is there any chance you could mail them back to me when you have the time. My address is below. Thank you!

Carrie Cordova
Water Rights Specialist
U.S. Fish & Wildlife Service
Water Resources Division (MS 60189)
P.O. Box 25486, Denver Federal Center
Denver CO 80225

303-236-5399
303-236-4224 (fax)
Jack Lalor/R6/FWS/DOI

Jack Lalor/R6/FWS/DOI
01/26/2012 07:02 AM

To Carrie Cordova/R6/FWS/DOI@FWS
cc Rob Bundy/R6/FWS/DOI@FWS, Robert Hoflen/R6/FWS/DOI@FWS
Subject data loggers

Carrie,

My apology for not getting back to you sooner.

We did get some of the loggers installed, but we never got to the point where we collected data on a regular basis. It doesn't look like we are going to devote the staff time to it. we have lots of excuses, but I'll spare you the list.

They are yours whenever you find a good home.

Jack Lalor
Tewaukon NWR
9756 143 1/2 Ave S.E.
Cayuga, ND 58013

701-724-3598 EXT 112